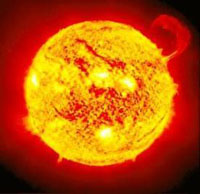
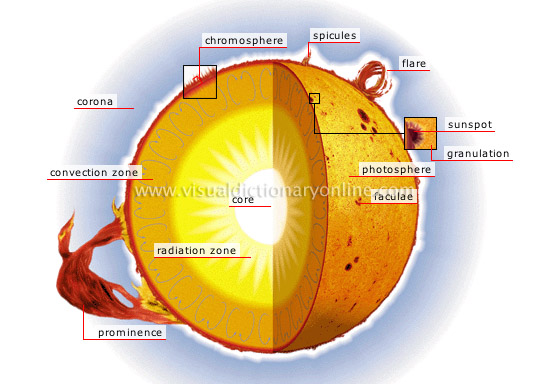
A VERY BIG STAR



The Sun is the closest star to Earth being approximately 150 million kilometres away from us. It moves in an almost circular orbit around the Milky Way (the name of the Sun's galaxy) at a speed of about 220 km/s. One revolution around the Milky Way takes about 230 million years. It is a huge ball of gas mostly made up of the elements hydrogen (70 %) and helium (28%). The Sun is about 332 900 times larger than the Earth. Gravitational pull holds the Sun together and produces extremely high temperatures and pressure at the core. Here, enormous amounts of energy are produced through a process called nuclear fusion. Under very high temperatures and pressure, two **hydrogen** atoms fuse together to form **helium**. This is the source of energy for the Sun.

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|  | **Did you know that the Sun emits so much light energy that we cannot see the stars until it sets in the evening? The Sun makes up 99% of the mass of the solar system and it is the brightest object in the sky.** |

Many space probes such as Ulysses, have been sent up to space to observe the sun and report back data. This has improved our knowledge of it and allowed us to construct the following model –



**Core:**The centre of the Sun where nuclear fusion produces the Sun's energy. It can reach 15 000 000 degrees Celsius.

**Chromosphere:**  The inner atmosphere of the Sun.

**Photosphere:**The surface of the Sun that is composed of gases. The average temperature is 5 500 degrees Celsius. Sometimes sunspots can occur. Sunspots are magnetic storms on the surface of the Sun.

**Solar flares:** Violent outbursts that occur close to the sunspots. They send high-energy sub-atomic particles into space.

**Solar prominences:** Eruptions of hot gas that can burst outward to a height of 400 000 km.

**Corona:** Outer atmosphere of the Sun is heated by the magnetic field to millions of degrees Celsius. The Corona is made up of charged particles that stream outwards from the Sun in what is known as solar winds.



The charged particles released by the solar flares affect the Earth. These effects take a few days after solar flares occur because the particles emitted move slower than light. The Earth is protected from most of the particles by our atmosphere and the magnetic field. Some particles are able to enter the atmosphere at the north and south poles. When they enter the atmosphere, they collide with other particles creating beautiful colours in the sky. In the Northern Hemisphere the **Aurora Borealis** is produced and in the Southern Hemisphere the Southern Lights or **Aurora Australis** is produced. The charged particles from the solar flares or solar prominences can also affect communications and radio transmission on Earth.

**The Sun is very important to the Earth for several reasons. Please provide at least 3 reasons below:**

**Does the sun move? Explain**

**Provide a definition for aurora.**